

DNA nanostructures

biocryptography

global warming - carbon sequestering
 - alternative energy

rebusco - inefficient photosynthetic organism

message relay system (DNA nanostructures?)

DNA toxin. → try to get it to open on call...

* loops/reursion built into cell... cellular computer?

yeast polarization: clear mother & daughter cell....

↳ doesn't grow all directions, only one direction

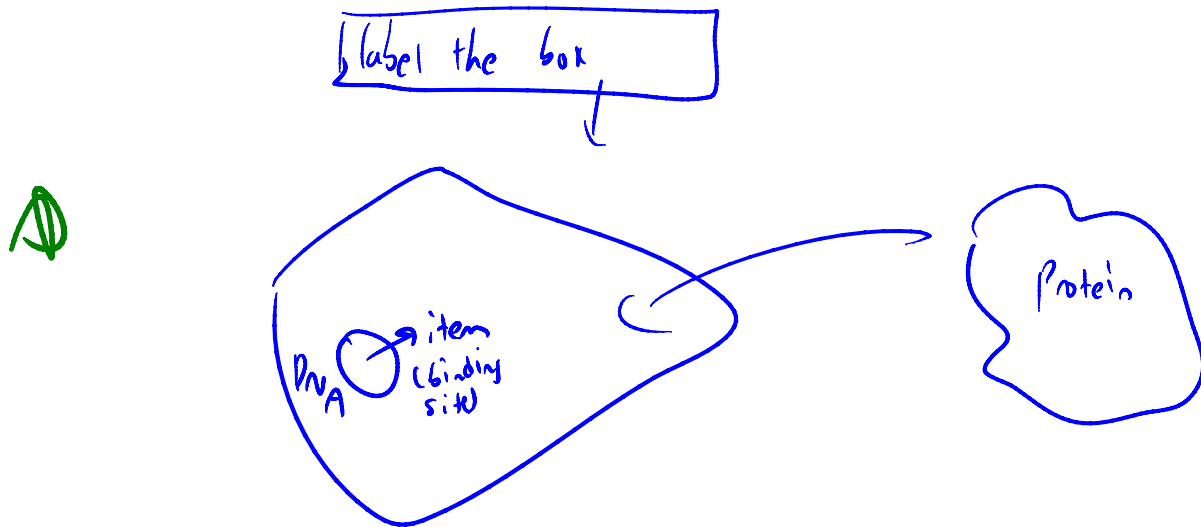
~~BAH~~

DNA nanostructures: opening structures

Fomenko's talk - ssDNA mismatched, put in a
"key" to open

↳ protein w/ reversible latch - binding protein?

→ protein w/ reversible latch - binding protein?



Φ_{abc} = phosphorylation system

- counter (shift register - telomeres?)
oscillators → control death! → bio cryptography

neurospira - circadian rhythm, oscillators

transcriptional & posttranscriptional mechanisms of control?

eukaryotic bisbricks

burning ethanol

biobricking ethanol to make yeast

what organisms eat toxics?

plasmid management / garbage collection

Katie: idea of memory; then garbage collection/ use of plasmids

Shawn: Ftsk translocase: a DNA motor; binds to DNA with sequence GNGNAGGG, allows for directional translocation. Moves 5kb/sec. Interest: simple manipulations of DNA. Use it to move stuff around...

Pam: Paper from Baker lab out of nature; specificity into the Ftsk translocase
Ties into degrading plasmids; manipulation to show the GNGNAGGG sequence, allows it to be removed.

George: Biofilms made by some organisms by spitting out DNA.

Tiffany: about biocryptography: let key be a cell; fold a DNA nanostructure s.t. idea theres a bunch of oligos which can fold a DNA nanostructure and use that as the "key...."

About yogurt: hijacking the gut bacteria (lactobacillus acidophilus)

Nicholas: Vernter's wife looking for bacteria that can't be cultured; looking for microorganisms in one's gut, finds a lot of stuff...

Pam: We don't have the tools for organisms that are not sequenced

Tiffany: DNA Nanostructure latch idea; proof of principle; put DNA nanostructures in IV and put into bloodstream; so put in your DNA box Gleevec for example, and the latch is triggered by receptors. Clasp-receptor... preventing biodegradability until the drug gets to the target.

Idea: Fill DNA nanostructures with proteins/drugs that share a binding site with DNA; then, when it gets to cancer or something a trigger causes the DNA to let go of the protein, or open the box without a protein there. (Peng)

Jeff: On memory; where to read/write on memory; where to retrieve something and get back out (high level stuff).

Other: Alternative splicing?

Lewis: a debugger; a reporter = printf("Hello World"); so how to diagnose problems; diagnose problems of actual genes being expressed or a protein interaction. Computer vision thing. Involving antibodies... But theres only 7 kinds of readout in the biological world? But eventually with complex gene circuits must look at multiple points of failure; come up with distinct protein domains. Big design problems... make up a bunch of parameters and do a test run? Or we could just design a debugger for whatever project we decide to do.

Peng: If you can coat something with a chemical which cancer cells undertake, then u could take a DNA nanocapsule with a molecule which is automatically targeted to cancer cells; when it ges there it opens and releases a marker which causes pain for example, allowing the CHEAP diagnosis of cancer. - biomarkers are difficult though. But supposedly there are chemicals which allow for it... and it involves the ideas we talked about before.

(Text on the board)

DNA nanostructures
-> opening/closing

Biocryptography

Global warming - alternative sources of energy
-carbon sequestering
-cyanobacteria

Message relay system

Counter (shift register, telomeres)

FTSk translocase (GNGNAGGG)

Debugger

Memory
-addressable eukaryotes

Biobricks into a pCMV vector; use different protein subunits for eukaryotic delivery

Biological readout for tumours

Hijacking

Commensal

Bact (lactobacillus, acidophilus)

Clasp - receptor, responsive

Team name:

Transformers